

WHAT IS CLAIMED IS:

1. A method for weakening a portion of a web comprising:
moving said web in a machine direction between at least a first
location and a second location, wherein said second location is positioned
5 downstream of said first location;
forming a line of weakness in said web at said first location,
wherein said web has a first tensile strength across said line of weakness; and
weakening said line of weakness at a second location, wherein said
web has a second tensile strength across said line of weakness after said line of
10 weakness is weakened at said second location, wherein said first tensile strength is
greater than said second tensile strength.
2. The invention of claim 1 wherein said forming said line of weakness
in said web at said first location comprises forming a cross-direction line of
weakness in said web.
- 15 3. The invention of claim 1 wherein said forming said line of weakness
at said first location comprises perforating said web.
4. The invention of claim 3 wherein said weakening said line of
weakness at said second location comprises breaking a portion of said perforated
web along said line of weakness.
- 20 5. The invention of claim 3 wherein said weakening said line of
weakness at said second location comprises moving said web through a nip at said
second location, wherein said nip is defined by first and second moveable
members, wherein said first moveable member comprises at least one insert
member and wherein said second moveable member comprises at least one recess
25 shaped to receive said insert member, and further comprising pushing at least a
portion of said web at said line of weakness with said insert member into said
recess.

6. The invention of claim 5 wherein said insert member comprises a bar and wherein said recess comprises a groove.

7. The invention of claim 5 comprising a plurality of spaced apart insert members.

5 8. The invention of claim 5 further comprising directing an air supply through said insert member.

9. The invention of claim 8 wherein said insert member comprises a channel for supplying said air supply.

10. The invention of claim 1 wherein said forming said line of weakness in said web at said first location comprises successively forming a plurality of spaced apart cross-direction lines of weakness in said web, and wherein said weakening said line of weakness at said second location comprises successively weakening said plurality of said spaced apart cross-direction lines of weakness.

11. A method for weakening a portion of a web comprising:
15 moving said web in a machine direction between at least a first location and a second location, wherein said second location is positioned downstream of said first location;

perforating said web along a cross-direction at said first location and thereby forming a cross-direction perforation in said web; and

20 moving said web through a nip at said second location, wherein said nip is defined by first and second moveable members, wherein said first moveable member comprises at least one insert member and wherein said second moveable member comprises at least one recess shaped to receive said insert member; and

25 pushing at least a portion of said web at said cross-direction perforation with said insert member into said recess.

12. The invention of claim 11 wherein said insert member comprises a bar and wherein said recess comprises a groove.

13. The invention of claim 11 comprising a plurality of insert members spaced apart along said cross-direction in alignment with said cross-direction perforation.

14. The invention of claim 11 further comprising directing an air supply 5 through said insert member.

15. The invention of claim 14 wherein said insert member comprises a channel for supplying said air supply.

16. The invention of claim 11 wherein said forming said perforation in said web at said first location comprises successively forming a plurality of spaced 10 apart cross-direction perforations in said web, and wherein said pushing said at least said portion of said web at said cross-direction perforation with said insert member into said recess comprises successively pushing at least a portion of said web at said plurality of spaced apart cross-direction perforations into said recess.

17. The invention of claim 11 wherein said first moveable member 15 comprises a plurality of insert members spaced circumferentially around a perimeter of said first moveable member at a plurality of circumferentially spaced perimeter positions.

18. The invention of claim 17 further comprising a plurality of insert members spaced along said cross-direction at each of plurality of said 20 circumferentially spaced perimeter positions.

19. The invention of claim 11 wherein said first and second moveable members comprise first and second rolls.

20. An apparatus for weakening a portion of a web comprising:
a first roll having a first outer surface and an insert member
25 extending outwardly from said first outer surface, wherein said first roll rotates about a first longitudinal axis; and

a second roll having a second outer surface and a recess extending inwardly from said second outer surface, wherein said second roll rotates about a second longitudinal axis, wherein said first and second outer surfaces form a nip therebetween, and wherein said insert member is received in said recess at said
5 nip.

21. The invention of claim 20 wherein said insert member comprises a longitudinally extending bar and wherein said recess comprises a longitudinally extending groove.

22. The invention of claim 20 comprising a plurality of longitudinally
10 spaced apart insert members.

23. The invention of claim 20 wherein said insert member comprises a channel adapted to supply an air supply.

24. The invention of claim 20 wherein said first roll comprises a plurality of insert members spaced circumferentially around a perimeter of said
15 first moveable member at a plurality of circumferentially spaced perimeter positions.

25. The invention of claim 24 wherein said first roll further comprises at least one knife extending outwardly from said first outer surface between at least one pair of said circumferentially spaced perimeter positions, wherein said at least one
20 knife engages said second outer surface of said second roll at said nip.

26. The invention of claim 24 further comprising a plurality of longitudinally spaced apart insert members positioned at each of said plurality of said circumferentially spaced perimeter positions.

27. The invention of claim 20 wherein said insert member extends
25 radially outward from said first outer surface.